UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,108	09/09/2003	Gerald H. Negley	5308-311	4336

7590 11/18/2004

Mitchell S. Bigel
Myers Bigel Sibley & Sajovec, P.A.
P.O. Box 37428
Raleigh, NC 27627

EXAMINER	
LE, THAO X	

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/659,108	NEGLEY ET AL.	
	Examiner	Art Unit	
	Thao X Le	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/01/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 21-28 are canceled in the amendment dated 11/01/04.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-5, 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by PUB 2003/0067264 to Takekuma.

Regarding claim 1, Takekuma discloses a mounting substrate for a semiconductor light emitting device comprising: a solid metal block 30 [0019] including a cavity 31 [00018] in a face thereof that is configured for mounting a semiconductor light emitting device 50 [0018] therein, fig. 1(a).

Regarding claim 2, Takekuma discloses the mounting substrate according to Claim 1 further comprising an insulating coating on a surface of the solid metal block [0019].

Regarding claim 3, Takekuma discloses the mounting substrate according to Claim 2 wherein the insulating coating [0019] is in the cavity, the mounting substrate further comprising first and second spaced apart conductive traces 41/42 on the insulating coating in the cavity that are configured for connection to a semiconductor light emitting device, fig. 1(a).

Regarding claims 4-5, Takekuma discloses the mounting substrate according to Claim 3 wherein face is a first face and wherein the first and second spaced apart conductive traces 41/42 extend from the cavity to the first face (top surface), around at least one side (vertical) of the metal block and onto a second face (bottom) of the metal block that is opposite the first face, wherein the first and second spaced apart41/42 on the insulating coating [0019] in the cavity comprise reflective material [0018].

Regarding claims 11-13, Takekuma discloses the mounting substrate in combination with a semiconductor light emitting device 50 [0019] that is mounted in the cavity and is connected to the first and second spaced apart conductive traces 46/46, fig. 1(a), further in combination with a lens 20 [0021] that extends across the cavity, in further combination with an encapsulant 70 [0022] between the semiconductor light emitting device 50 and the lens 20.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 6-7, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US PUB2003/0067264 to Takekuma in view of US 6531328 to Chen.

Regarding claims 6-7, Takekuma does not discloses the mounting substrate according to Claim 3 wherein the face is a first face and wherein the solid metal block includes therein first and second through holes that extend from the first face to a second face of the solid metal block that is opposite the first face, the respective first and second through holes including a respective first and second conductive via therein that extends from the first face to the second face and wherein a respective one of the spaced apart conductive traces is electrically connected to a respective one of the conductive vias, wherein the first and second holes extend from the cavity to the second face.

However, However, Chen discloses the mounting substrate in fig. 18 comprising a first face (top surface) and wherein the solid substrate block 8, column 4 line 43, includes therein first and second through holes 14, column 4 line 58 that extend from the first face to a second face of the solid block 8 that is opposite the first face, the respective first and second through holes including a respective first and second conductive via therein that extends from the first face to the second face and wherein a respective one of the spaced apart conductive traces 16/17/18, column 5 lines 5-10, is electrically connected to a respective one of the conductive vias 14, fig. 18, and vias 14 extend from the cavity 11, fig. 8, to the second face. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the conductive vias of LED packaging

teaching of Chen with Takekuma, because it would have good the thermal dissipation of the LED device as taught by Chen, see abstract.

Regarding claim 10, Takekuma discloses a mounting substrate further comprising third and fourth space apart conductive traces 44/43, fig. 1(a) on the second face of the solid metal block.

But Takekuma does not disclose a respective one of which is connected to a respective one of the conductive vias.

However, However, Chen discloses the mounting substrate in fig. 18 further comprising third and fourth space apart conductive traces 18/17 on the second face of the solid block a respective one of which is connected to a respective one of the conductive vias 14. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the conductive vias of LED packaging teaching of Chen with Takekuma, because it would have good the thermal dissipation of the LED device as taught by Chen, see abstract.

7. Claims 8 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US PUB2003/0067264 to Takekuma in view of US 6639356 to Chin and US 6531328 to Chen.

Regarding claims 8, 14, Takekuma discloses the mounting substrate according to Claim 2 wherein the solid metal block [0019] and wherein the insulating coating comprises resin, affixing insulating film [0019].

But Takekuma does not disclose the metal block is aluminum and wherein the insulating coating comprises aluminum oxide, and a lens retainer on the solid metal block that is configured to hold the lens across the cavity.

However, Chin discloses the LED package in fig. 1 comprises the aluminum metal block 1, column 2 line 16, and wherein the insulating coating 2 comprises aluminum oxide, column 2 line 21, and a lens retainer 23 on the solid metal block that is configured to hold the lens across the cavity, fig.1.

At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the aluminum metal block with aluminum oxide insulating coating teaching of Chin with Takekuma, because it would have improved the heat dissipation as taught by Chin, column 2 lines 55-59.

Regarding to claim 9, see discussion in claim 6 above.

Regarding claim 15, Takekuma discloses a light emitting device in fig. 1(a) comprising: a solid metal block 30 [0019] including a cavity 3, fig. 1(a) in a face thereof and an insulating layer [0019] on a surface thereof including on the cavity, first and second spaced apart conductive traces 41/42 on the insulating layer in the cavity 31; a semiconductor light emitting device 50, fig. 1(a) that is mounted in the cavity and is connected to the first and second spaced apart conductive traces 41/42, a lens 20 that extends across the cavity; and an encapsulant 70 between the semiconductor light emitting device 50 and the lens 20.

But Takekuma does not disclose the metal block is aluminum and wherein the insulating coating comprises aluminum oxide.

However, Chin discloses the LED package in fig. 1 comprises the aluminum metal block 1, column 2 line 16, and wherein the insulating coating 2 comprises aluminum oxide, column 2 line 21.

At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the aluminum metal block with aluminum oxide insulating coating teaching of Chin with Takekuma, because it would have improved the heat dissipation as taught by Chin, column 2 lines 55-59.

Regarding claims 16-17, Takekuma discloses a light emitting device wherein the face is a first face (top surface) and wherein the first and second spaced apart conductive traces 41/42 extend from the cavity to the first face, around at least one side of the solid metal block and onto a second face (bottom) of the solid metal block that is opposite the first face, wherein the first and second spaced apart conductive traces 41/42 on the insulating layer coating in the cavity comprise reflective material [0018].

Regarding claims 18-20, Takekuma does not discloses a light emitting device wherein the face is a first face and wherein the solid metal block includes first and second through holes that extend from the first face to a second face of the solid metal block that is opposite the first face, the respective first and second through holes including the aluminum oxide coating thereon and a respective first and second conductive via therein that extends from the first face to the second face and wherein a respective one of the spaced apart conductive traces is electrically connected to a respective one of the conductive vias.

However, Chin discloses the LED package in fig. 1 comprises the aluminum metal block 1, column 2 line 16, and wherein the insulating coating 2 comprises aluminum oxide, column 2 line 21.

At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the aluminum metal block with aluminum oxide insulating

coating teaching of Chin with Takekuma, because it would have improved the heat dissipation as taught by Chin, column 2 lines 55-59.

With respect to via, Chen discloses the mounting substrate in fig. 18 further comprising third and fourth space apart conductive traces 18/17 on the second face of the solid block a respective one of which is connected to a respective one of the conductive vias 14. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the conductive vias of LED packaging teaching of Chen with Takekuma, because it would have good the thermal dissipation of the LED device as taught by Chen, see abstract.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on (571) 272 -1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thao X. Le
15 Nov. 2004

LONG PHAM
PRIMARY EXAMINER